SVE FILE

FedEx Distribution Center Parking Expansion – Submittal Summary

To: Tricia at Town Hall
From: Rob Hitchcock, SVE Associates
Date: 4-27-2020

We are providing 5 sets of paper plans, 1 application fee check for $113 and 2 copies of the application and supporting documentation which includes the following:

1. Review checklist
2. Application
3. Representation designation
4. Abutters list and labels
5. Applicant acknowledgement
6. Use intensity statement
7. Drainage summary
8. HydroCad post 10 year
   Post 50 year
   Pre 10 year
   Post 50 year

SVE Associates
Engineering * Surveying * Landscape Archicture * Planning
PO Box 1818, Brattleboro, VT 05302 Phone: (802) 257-0561 E-mail svek@sveassoc.com

SVE ASSOCIATES
Engineering, Landscape Architecture
Surveying, Planning
P.O. Box 1818
BATTLEBORO, VERMONT 05302
Phone (802) 257-0561 Fax (802) 257-0721

JOB FED EX PROJ. #
SHEET NO. OF
CALCULATED BY DATE 4.22.20
CHECKED BY DATE
SCALE

FEE COMPUTATION

LAND COVERAGE = 180 × 400 = 72,000SF

FEE = $100 + $5 × 72 = $460

ABUTTER NOTIFICATION

7 ABUTTERS/OWNER/ENG @ $9 EA = $63

TOTAL DUE = $523

PAYABLE TO TOWN OF CHESTERFIELD

A. MULLIGAN ASSOC. LLC
7 CASTLEBROOK WAY
EAN ISLE BEACH, NC 28469
)) 579-4535

3176

67-98/532

DATE 4/22/20

CHECK ARMOR FRAUD PROTECTION

THE ORDER OF TOWN OF CHESTERFIELD N.H. $ 523.00

FIVE HUNDRED TWENTY THREE & 00/100 DOLLARS

Photo Safe Deposit® Details on back

SOUTH STATE BANK
SouthStateBank.com

J. Mulligan

⑈003176⑈ ⑆053200983⑆00600006317⑈

MAJOR SITE DEVELOPMENT

APPLICATION REVIEW CHECKLIST
PLANNING BOARD
CHESTERFIELD, NH

See **201.2A** for definition of Major Site Development

Site Plan Name FedEx Parking Expansion Date Submitted 4/27/2020

Property Location 40 Coachman Road Map 12A Lot(s) 1.28

This checklist is to be completed by the applicant and submitted with the application

Documents for Complete Application	Complete	Comments
1. Application form (sig. & notarized author. if appl)	X	
2. Fees paid **(Appendix B)**	X	
3. Abutter List/Cards/Labels **(405.2 B)**	X	
4. Inspection permission **(405.2 C)**	X	
5. Final Site Plans ***minimum***: (5 ***paper*** & 1 mylar)	X	***5 paper copies must be presented with completed application.***
(including all req'd by **(403.3A)**	X	***PB may request additional copies as need identified.***
Drafting standards Per **401** – Land Development Regs.	X	
Signature block (large enough for 7 signatures)	X	
Use Intensity Statement	X	
Certification **(405.3 H)**	X	
6. Deeds, easements covenants to Town **(405.2E)** (if req.)	___	
7. Federal, State & Local Permits **(405.2F)** (if req.)		
Septic System	Pending X Approved ___	
	Pending ___ Approved ___	
Alteration of Terrain	Pending X Approved ___	
8. Waiver requests **(405.3 H)**	X	
9. Other as determined by the Planning Bd. **(405.2G)**		
_____	___	
_____	___	
Three (3) copies of the following **(405.3):**		
10. Final Topographic & soils plans as req'd in **403.2B**	X	
11. Final Surface water drainage plan as req'd in **403.2C**	X	
12. Erosion and sediment control plan as req'd in **404.5D**	X	
13. On-site waste disposal systems	X	
14. Building elevations	___	
15. Condominium Documents (if applicable)	___	

Planning Board Issues/Questions	Answered	Comments
• Determination of Regional Impact	X	
• In accordance with Master Plan	X	
• ZBA requirements (file ZBA app. prior to Pl. Bd. app.)	___	
Zoning Board approval needed prior to approval	___	
• Conservation Commission input to Wetlands impact	___	

(This page is provided to applicants as a guide for completing applications. Site Development application requirements include but are not limited to these items)

NOTICE TO ALL APPLICANTS: Please be advised that Public Service of New Hampshire (PSNH) has obtained and recorded rights and easements to construct, repair, operate, patrol and remove electrical lines. Many of these easements include the right to remove all structures or obstructions found within the transmission strip. Consequently it is important that current landowners realize PSNH's rights when developing land adjacent to transmission lines. Please note that a packet of information from PSNH is available for review in the Selectmen's office along with Planning Board Applications. Copies are available for a fee of 50 cents per page from the Selectmen's Secretary. The packet advises all parties submitting subdivision plans, site plans, etc., involving their easements, of PSNH's interest in reviewing these plans, and requests parties to forward copies of the plans or to contact Celine Bilodeau at 634-3200.

APPLICATION FOR SITE DEVELOPMENT REVIEW

To: Town of Chesterfield Planning Board

For Office Use Only:

Date Filed: _____
Application Received By: _____
Amount Paid: _____

INCOMPLETE OR INACCURATE APPLICATIONS SHALL BE REFUSED

All information must be submitted to the Selectmen's Office with the application. **IT IS THE RESPONSIBILITY OF THE APPLICANT TO ENSURE THAT ALL OF THE REQUIRED INFORMATION IS ACCURATE AND COMPLETE.** The Planning Board has the right to require additional information necessary to make a decision at any time during this process.

Selectmen's Office Hours are Monday – Thursday, 8:00 AM – 4:00 PM and Friday 9 AM – 12 PM

Public Hearings are held the FIRST MONDAY of the month at 7:30 pm at the Selectmen's Office unless otherwise posted.

PLEASE PRINT OR TYPE

Name of Applicant* SVE Associates, Attn: Rob Hitchcock

Mailing Address P.O. Boxc 1818, Brattleboro, VT 05302

Location of Proposal FedEx, Coachman Road
(Street, Subdivision, Tax Map #)

Daytime Phone # 603-381-4667 Evening Phone # Same

Owner's Name J.A. Mulligan Associates, LLC

Mailing Address 6637 Castlebrook Way, Ocean Isle Beach, NC 28469

*Anyone other than the property owner representing the property **MUST HAVE** Power of Attorney or a STATEMENT from the property owner.

SITE PLAN REVIEW APPLICATION

Please check which applies, NOTE: See Land Development Regulations for definition

Is this a _____ Preliminary Application OR a __X__ Final Application

For a _____ Minor Site Plan Review OR a __X__ Major Site Plan Review

Please provide a description of the planned project or change in use. If necessary please attach a separate statement for use intensity.

_____

Applications are due at least twenty-one (21) days prior to a regular meeting

ZONING DISTRICT

Please check all that apply:	Estimated acreage for each zone that applies:
____Residential	_____acres
____Rural / Agricultural	_____acres
____Village	_____acres
X Commercial / Industrial	22 +/- acres
____Office / Retail / Services	_____acres

Are any waivers being requested from the Board? Yes

If yes which waivers? Landscaping

LIST OF ABUTTERS* See Attached

*An abutter is any person whose property is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration, or who owns land within 200 feet of the boundaries of the land under consideration.

1) The name and address of the firm and/or persons whose stamp is present on the plan.

Name: _____

Mailing Address: _____

_____

2) List all Property Abutters, refer to definition listed above: (Attach additional sheet if needed)

VOID

ATTACHED

Name: _____ Name: _____

Mailing Address _____ Mailing Address: _____

_____ _____

Map & Lot # _____ Map & Lot # _____

Name: _____ Name: _____

Mailing Address _____ Mailing Address: _____

_____ _____

Map & Lot # _____ Map & Lot # _____

Name: _____ Name: _____

Mailing Address _____ Mailing Address: _____

_____ _____

Map & Lot #_____

Name: _____

Mailing Address_____

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Map & Lot #_____

Map & Lot #_____

Name: _____

Mailing Address: _____

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Map & Lot #_____

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Mailing Address_____

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Mailing Address: _____

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Map & Lot #_____

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Map & Lot #_____

Name: _____

Mailing Address: _____

_____

Map & Lot #_____

Name: _____

Mailing Address_____

_____

Map & Lot #_____

Name: _____

Mailing Address: _____

_____

Map & Lot #_____

Applicant has read and completed the application accurately to the best of his/her knowledge.

Signature: Rob Hitchcock Date: 4·27·2020

PLANNING BOARD
TELEPHONE (603) 363-4624

TOWN OF CHESTERFIELD
PLANNING BOARD
ABUTTER NOTIFICATION
APPLICANT ACKNOWLEDGEMENT

All applications requiring a public hearing must include a $9.00 Notification Fee and updated address for each of the following: the applicant, abutters *(see parameters below)*, all professionals whose seal appears on any plat submitted to the Board as defined in RSA 676:4, I (d) [every engineer, architect, land surveyor, or soil scientist], holders of conservation, preservation or agricultural preservation restrictions, and other persons with direct interest as indicated by applicant by way of inclusion on the abutter list (including authorized agents/representatives).

ABUTTER: Any person whose property is located in New Hampshire and adjoins or is directly across the street or stream from the land under consideration by the Planning Board or who owns land within 200 feet of the boundaries of the land under consideration. For purpose of receiving testimony only, and not for purposes of notification, the term "abutter" shall include any person who is able to demonstrate that his land will be directly affected by the proposal under consideration.

LIST OF ABUTTERS:

Under the requirements of **RSA 676:4, I (b)** an applicant must submit the names and mailing addresses of the applicant and all abutters to the property under consideration. **The names of the abutters must be taken from the municipal records not more than five days before the date on which the application is filed**. Please note that the applicant is solely responsible for providing a complete and accurate list of abutters. Any abutter whose contact information was reasonably available from Town records 5 days prior to submission of the application, and whose name and address were not accurately included on the abutter list for notification, may have a right to appeal any decision by the Planning Board. Abutter information is available for research in the Selectmen's office.

The undersigned acknowledges and affirms that they have the legal right to file an application with the Planning Board as the landowner(s)/trustee(s) or appointed agent acting on behalf of the landowners; and avows that a complete abutters list has been provided and has been updated a minimum of five (5) days prior to submission of the application.

Printed Name	Signature	Date
Rob Hitchcock	Rob Hitchcock	4/27/2020
		/ /

Printed Name *Signature* *Date*

PLANNING BOARD
TELEPHONE (603) 363-4624

TOWN OF CHESTERFIELD
PLANNING BOARD
DESIGNATION OF AUTHORIZED REPRESENTATIVE

I/We, J.A. MULLIGAN (and) _____, as land-owner(s) and/or trustee(s) of the land listed below:

Location of Land: 40 COACHMAN RD

Map: 12 **Lot:** 1-28-2

Map: _____ **Lot:** _____

authorize the following individuals:

ROB HITCHCOCK	JVE ASSOC.	ENGINEER
(Name)	*(Company Name)*	*(Capacity)*
_____	_____	_____
(Name)	*(Company Name)*	*(Capacity)*
_____	_____	_____
(Name)	*(Company Name)*	*(Capacity)*

to act as agent(s) on my/our behalf in matters related to the PARKING LOT (type) application submitted on 7/27/2020 (date)

J.A. MULLIGAN	J.A. Mulligan	9/22/20
Printed Name	***Signature***	***Date***
_____	_____	/ /
Printed Name	***Signature***	***Date***

*Please list any agents, architects, engineers or other individuals that you may wish the Planning Board to contact directly in reference to your application, will present or conduct business on your behalf, or has affixed his/her seal to any technical or engineered drawings. *Be advised that any licensed surveyor or engineer affixing his/her seal to any submission must be included on the "Abutter List" to receive notification of public meetings or public hearings.*

PLANNING BOARD
TELEPHONE (603) 363-4624

TOWN OF CHESTERFIELD
PLANNING BOARD
PERMISSION FOR SITE VISIT

**This document must be signed by all land-owners as listed on the deed(s)*

I/We, J.A. Mulligan (and) _____, as land-owner(s) and/or trustee(s) of the land listed below, authorize the members of the Town of Chesterfield Planning Board, its agents and assigns to enter the premises for purposes of site review in conjunction with the Parking Lot (type) application submitted on 4/27/2020 (date) I/We further acknowledge that any site visit attended by a quorum of the Planning Board constitutes a public meeting. Any such meeting shall be noticed and open to the non-board public. I/We authorize public access to the site under such circumstances where an on-site meeting is called for by the Planning Board.

Location of Land: 40 Coachman Rd.

Map: 12 **Lot:** 1.20-2

Map: _____ **Lot:** _____

Printed Name	Signature	Date
J.A. Mulligan	J.A. Mulligan	4/22/20
		/ /

Additional copies available upon request.

There must be one signature for each owner/trustee listed on the deed(s).

Application is subject to "Denial Without Prejudice" if signed form does not accompany the application.

FedEx Distribution Center Parking Expansion

Traffic Projection

40 Coachman Road, West Chesterfield

April 27, 2020

The following "peak season average" figures were recently provided by FedEx at my request.

	2013/18 projected	2019 actual	2025 projected
employees who arrive and stay; management, office, packers:	40	36	58
employees who arrive, leave, return, go home; van drivers:	70	69	145
trucks per day other than vans; bulk deliveries:	12	12	20

Trip ends - a trip end being an arrival to or a departure from the site

in 2013, the 2018 projection was; 40x2 + 70x4 + 12x2 = 384 trip ends per day, average during peak season

in 2019, the actual was; 36x2 + 69x4 + 12x2 = 372 trip ends per day, average during peak season

in 2025, the projection is: 58x2 + 145x4 + 20x2 = 736 trip ends per day, average during peak season

The projected increase in traffic from 2019 to 2025 is 182 trips, or 364 trip ends, on average during the peak season.

FedEx Distribution Center Parking Expansion
Use Intensity Statement

40 Coachman Road, West Chesterfield

April 27, 2020

The application before the Planning Board is for permission to construct a new parking lot at the FedEx Distribution Center on the J.A. Mulligan Associates property located at tax map 12, block A, lot 1.28-2 with an address of 40 Coachman Road. There is no expansion to the building being proposed at this time. There continues to be no public drop off or pick up service offered at the site.

FedEx has a dire need to expand the capacity of the facility now due to the growth of on-line shopping. FedEx operations and staffing are designed to respond to the Christmas shopping season volume. As you would expect the on-line shopping volume has exploded recently due to the COVID 19 virus. The delivery volume is similar to a typical Christmas volume. FedEx is projecting the volume to taper off once the virus passes but they are expecting on-line shopping to forever remain at elevated levels.

The proposed expansion is for 189 employee parking spaces. The 65 existing employee spaces to the west of the driveway will become delivery van parking spaces. The parking to the east of the drive nearer to the building will remain as is. This parking arrangement is expected to meet demand until 2025.

Based on information provided by FedEx, this expansion will add about 182 additional trips per day in 2025. The growth is mostly due to an increase in the number of van drivers. See the attached table dated April 27, 2020 for more detail on these numbers.

The volume of fill to be brought on-site is approximately 20,000 cubic yards. That equates to approximately 1,300 truckloads. Pat Rawson Excavating, West Chesterfield, will be the contractor.

The new parking lot will be situated over the current leach field. That field will be removed, and a new larger leach field will be constructed under the pavement. NHDES approval of this leach field is required.

Virtually all of the stormwater that falls on the proposed parking lot will drain to a subsurface sand filter situated under the pavement. We will use polyethylene chambers and stone to provide storage volume for the rainwater until it filters through a sand layer and into an underdrain system. The net result will be a reduction in the storm water runoff in both the 10 year and the 50 year rainfall events. An Alteration of Terrain permit from the NHDES for this stormwater treatment system is required.

There will be 6 new pole lights proposed for the parking lot. The lights will be mounted 22.5' above grade, with photocell and timer controls.

The parking lot will be supported on 3 sides by segmental block retaining walls. Guardrail and chain link fence will be installed at the perimeter of the parking lot for personnel and vehicle safety.

FedEx must expand their ability to process and deliver product as quickly and efficiently as possible. Without adequate parking FedEx will be forced to relocate when their lease expires. FedEx would very much prefer to stay in Chesterfield as relocation has significant social and economic impacts on their business, their employees, and their employee's families.

Surface Water Management Plan

for the

FedEx Distribution Center Expansion

40 Coachman Rd.
Chesterfield, N.H.

Dated: 04/27/2020

Prepared By:
SVE Associates
P.O. Box 1818
Brattleboro, VT 05302

Reviewed By:
Liza Sargent P.E.
SVE Associates
P.O. Box 1818
Brattleboro, VT 05302

Liza Sargent, P.E.
PE No. 13365

SVE

Engineering
Planning
Landscape Architecture
Surveying

SVE Associates
P.O. Box 1818
439 West River Road
Brattleboro, VT 05302

Tel: 802.257.0561

www.sveassoc.com

Table of Contents

1.0 Introduction

This Surface Water Management Plan documents the drainage impacts associated with the proposed parking lot expansion of the FedEx Distribution Center in Chesterfield, N.H. The property is located at 40 Coachman Road. The property is partially developed. The existing improvements were constructed in 2007 with the latest improvements in 2013. FedEx is looking to expand parking on the lot as they continue to grow their package delivery capabilities.

2.0 Existing Conditions

2.1 Site Characteristics

The lot was initially developed in 2007. The existing FedEx Distribution Center has a total of approximately 113,616 square feet of gross floor area according to the current property card. The property is served by an onsite well and septic system. Run off from the previously developed property drains to an existing stormwater detention basins in the southeastern corner of the property, or to a basin located behind the building, adjacent to the pavement. The undeveloped portion of the property is forested.

2.2 Soil Characteristics

Review of the Natural Resources Conservation Service Web Soil Survey indicates the soil in the expansion project area are: 341B Stissing Silt Loam, 0-5% slopes, very stony, 367D Dutchess Silt Loam, 15-25% slopes, very stony and 365E Monadnock & Berkshire Soils, 25-60% slopes, extremely stony. These soils are considered to have a hydrologic classification of C, B and B, respectively.

A site specific soil survey was conducted by Tom Perragallo, as required by Alteration of Terrain rules. Our analysis is based on Perragallo's mapping, not that of NRCS..

2.3 Flood Plain

Review of the Flood Insurance Rate Map (FIRM) for the Town of Chesterfield, New Hampshire, Community Panel 33005C0240E effective date: May 23, 2006, indicates the subject property is not in the flood plain.

2.4 Existing Hydrology

The drainage area studied for this project is approximately 98,000 sf in size. Hydrological calculations indicate the expected runoff generated from the existing project site on the property. The stormwater runs overland from west to east to the woods.

Refer to sheet SW-2 in the plan set for the existing conditions hydrology exhibit to designate areas used for the analysis.

The table below summarizes the results of the existing runoff calculations for the property. Flow is represented in cubic feet per second (CFS).

Design Storm	Existing Runoff Area 1
Q_{10}	1.6 cfs
Q_{50}	6.2 cfs

Refer to the HydroCad printouts for hydrology calculations.

3.0 Developed Conditions

3.1 Design Objectives

The objective of Stormwater Management studies is to analyze the pre- and post-development stormwater runoff conditions so detention basins can be designed, constructed, and utilized to prevent potential negative impacts to downgradient properties. In this specific case, there will be approximately 67,000 square feet of additional impervious area that will result in an increase in runoff. In order to mitigate this condition, stormwater generated from the new parking lot will be collected in catch basins and routed to an underground treatment and detention facility that will attenuate the expected increase. The result will be peak runoff rates less than what exists today.

3.2 Developed Hydrology

The limited drainage area studied for the developed hydrology consists of the same overall area examined in the existing hydrology. Refer to SW-3 for the subcatchment delineations.

3.3 Summary of Post Developed Hydrology (CFS)

Design Storm	Developed Area 1
Q_{10}	1.2 cfs
Q_{50}	2.1 cfs

Design Storm	Total Existing	Total Developed	Δ
Q10	1.6 cfs	1.2 cfs	**0.4 cfs**
Q50	6.2 cfs	2.1 cfs	**4.1 cfs**

4.0 Stormwater Management Standards

The Surface Water Drainage System is consistent with the standards outlined in section 604.2 of the Land Development Regulations.

A. The proposed system routs drainage to the existing woods.

B. The proposed parking lot will have a significant increase in runoff. To mitigation the increase, an underground detention area consisting of ADS SC-310 chambers will be installed to attenuate the expected increase of flow from the additional 67,000 SF of impervious area.

C. There will be no increase in expected peak flow rates after the FedEx parking lot expansion.

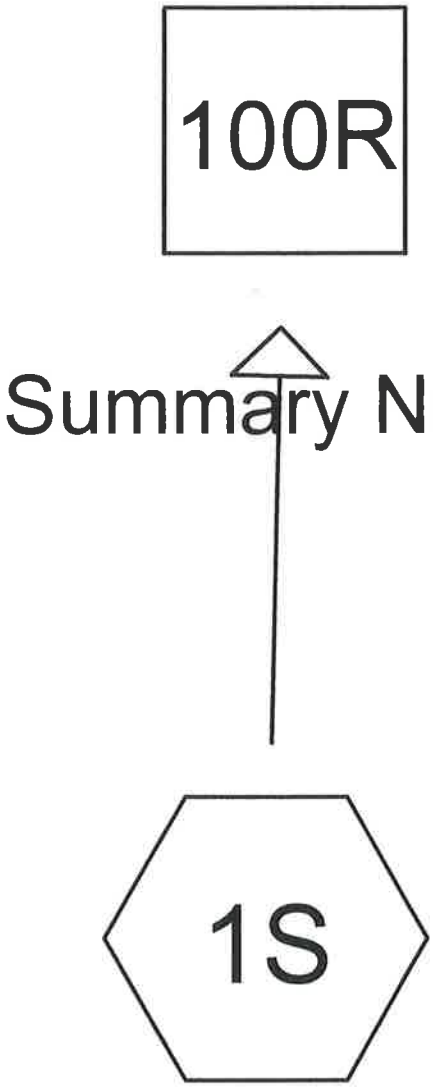
D. No easements are required because all facilities are located within the property.

E. The runoff from the expansion is solely from the parking lot. The runoff will be treated by the sand filter media underneath the chamber. No degradation of water quality is expected.

5.0 Conclusion

This Surface Stormwater Management Plan has been prepared to document the stormwater impacts associated with the parking lot expansion of FedEx Distribution Center. The calculation presented have been completed in accordance with section 604 of the Land Development Regulations. The proposed stormwater drainage system was designed for the 10 and 50 year design storms. The conclusion based on system design indicates the onsite runoff will be managed and there will be no adverse impacts to the downstream abutters.

PRE D



Ex. Cond.

FEDEX - MULLIGAN

Subcat Reach Pond Link

Routing Diagram for K2331A PRE
Prepared by {enter your company name here}, Printed 4/27/2020
HydroCAD® 10.00-20 s/n 01314 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.779	61	>75% Grass cover, Good, HSG B (1S)
0.156	74	>75% Grass cover, Good, HSG C (1S)
0.186	98	Paved parking, HSG C (1S)
0.599	55	Woods, Good, HSG B (1S)
0.529	70	Woods, Good, HSG C (1S)
2.249	**65**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.378	HSG B	1S
0.871	HSG C	1S
0.000	HSG D	
0.000	Other	
2.249		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.779	0.156	0.000	0.000	0.934	>75% Grass cover, Good	1S
0.000	0.000	0.186	0.000	0.000	0.186	Paved parking	1S
0.000	0.599	0.529	0.000	0.000	1.128	Woods, Good	1S
0.000	**1.378**	**0.871**	**0.000**	**0.000**	**2.249**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Cond. Runoff Area=97,950 sf 8.27% Impervious Runoff Depth>0.61"
Flow Length=185' Tc=1.8 min CN=65 Runoff=1.64 cfs 0.114 af

Reach 100R: Summary Node Inflow=1.64 cfs 0.114 af
Outflow=1.64 cfs 0.114 af

Total Runoff Area = 2.249 ac Runoff Volume = 0.114 af Average Runoff Depth = 0.61"
91.73% Pervious = 2.063 ac 8.27% Impervious = 0.186 ac

Summary for Subcatchment 1S: Ex. Cond.

Runoff = 1.64 cfs @ 12.05 hrs, Volume= 0.114 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YR Rainfall=3.36"

Area (sf)	CN	Description
26,110	55	Woods, Good, HSG B
23,040	70	Woods, Good, HSG C
33,920	61	>75% Grass cover, Good, HSG B
6,780	74	>75% Grass cover, Good, HSG C
8,100	98	Paved parking, HSG C
97,950	65	Weighted Average
89,850		91.73% Pervious Area
8,100		8.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	25	0.2400	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
0.5	160	0.1200	5.20		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.8	185	Total			

Summary for Reach 100R: Summary Node

Inflow Area = 2.249 ac, 8.27% Impervious, Inflow Depth > 0.61" for 10 YR event
Inflow = 1.64 cfs @ 12.05 hrs, Volume= 0.114 af
Outflow = 1.64 cfs @ 12.05 hrs, Volume= 0.114 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Ex. Cond. Runoff Area=97,950 sf 8.27% Impervious Runoff Depth>2.01"
Flow Length=185' Tc=1.8 min CN=65 Runoff=6.19 cfs 0.377 af

Reach 100R: Summary Node Inflow=6.19 cfs 0.377 af
Outflow=6.19 cfs 0.377 af

Total Runoff Area = 2.249 ac Runoff Volume = 0.377 af Average Runoff Depth = 2.01"
91.73% Pervious = 2.063 ac 8.27% Impervious = 0.186 ac

Summary for Subcatchment 1S: Ex. Cond.

Runoff = 6.19 cfs @ 12.04 hrs, Volume= 0.377 af, Depth> 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50YR Rainfall=5.77"

Area (sf)	CN	Description
26,110	55	Woods, Good, HSG B
23,040	70	Woods, Good, HSG C
33,920	61	>75% Grass cover, Good, HSG B
6,780	74	>75% Grass cover, Good, HSG C
8,100	98	Paved parking, HSG C
97,950	65	Weighted Average
89,850		91.73% Pervious Area
8,100		8.27% Impervious Area

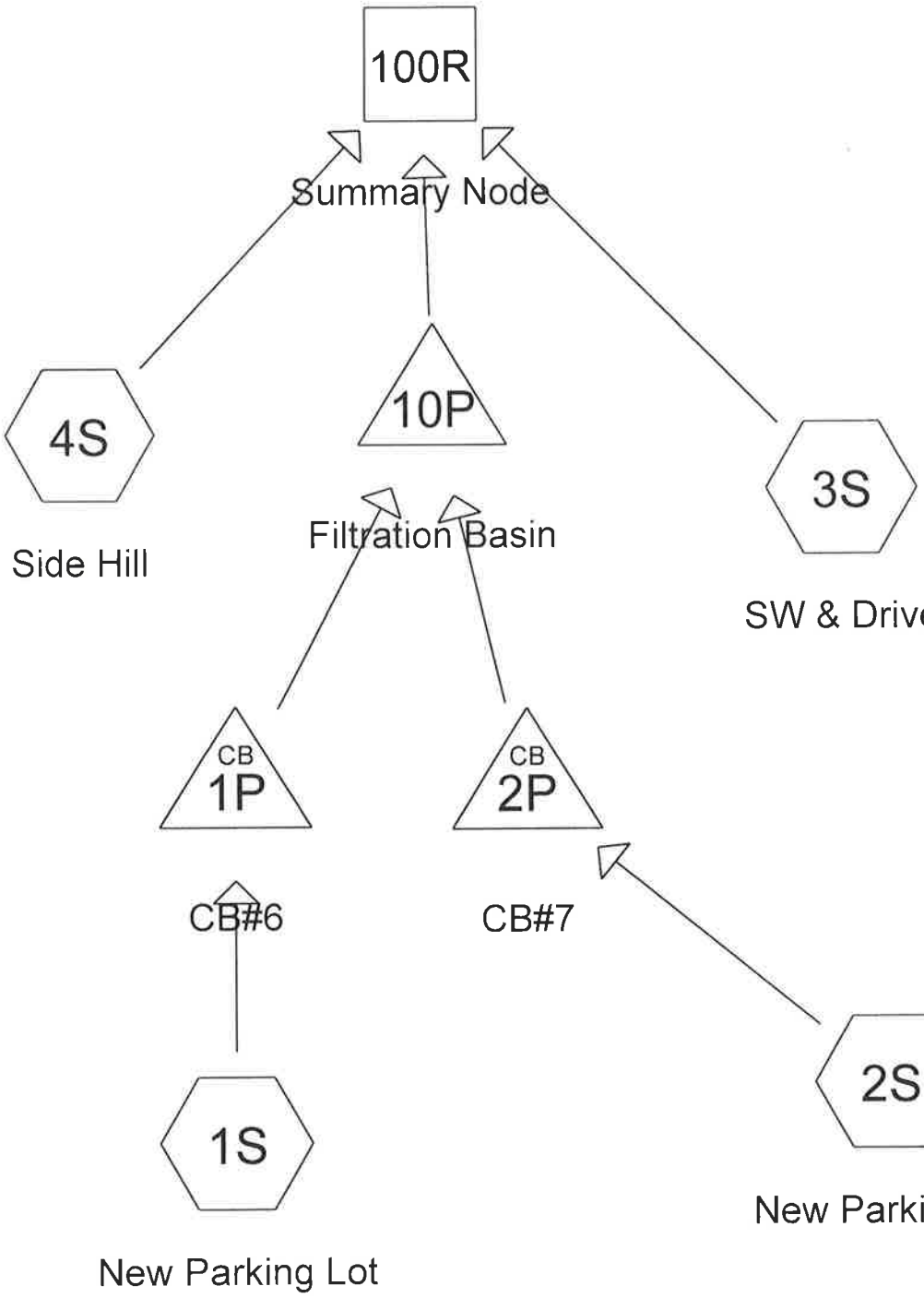
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	25	0.2400	0.33		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
0.5	160	0.1200	5.20		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.8	185	Total			

Summary for Reach 100R: Summary Node

Inflow Area = 2.249 ac, 8.27% Impervious, Inflow Depth > 2.01" for 50YR event
Inflow = 6.19 cfs @ 12.04 hrs, Volume= 0.377 af
Outflow = 6.19 cfs @ 12.04 hrs, Volume= 0.377 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

POST D



FEDEX - MULLIGAN

Subcat Reach Pond Link

Routing Diagram for K2331A POST
Prepared by {enter your company name here}, Printed 4/27/2020

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.339	69	50-75% Grass cover, Fair, HSG B (1S, 2S, 4S)
0.063	79	50-75% Grass cover, Fair, HSG C (3S, 4S)
1.238	98	Paved parking, HSG B (1S, 2S, 3S, 4S)
0.551	98	Paved parking, HSG C (1S, 2S)
0.136	60	Woods, Fair, HSG B (4S)
2.327	**91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.713	HSG B	1S, 2S, 3S, 4S
0.614	HSG C	1S, 2S, 3S, 4S
0.000	HSG D	
0.000	Other	
2.327		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.339	0.063	0.000	0.000	0.402	50-75% Grass cover, Fair	1S, 2S, 3S, 4S
0.000	1.238	0.551	0.000	0.000	1.789	Paved parking	1S, 2S, 3S, 4S
0.000	0.136	0.000	0.000	0.000	0.136	Woods, Fair	4S
0.000	**1.713**	**0.614**	**0.000**	**0.000**	**2.327**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	667.00	666.50	50.0	0.0100	0.013	15.0	0.0	0.0
2	2P	668.20	666.50	120.0	0.0142	0.013	15.0	0.0	0.0
3	10P	662.60	662.10	50.0	0.0100	0.013	8.0	0.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: New Parking Lot Runoff Area=42,050 sf 87.99% Impervious Runoff Depth=2.80"
Flow Length=325' Slope=0.0500 '/' Tc=1.7 min CN=95 Runoff=3.49 cfs 0.225 af

Subcatchment2S: New Parking Lot Runoff Area=42,050 sf 87.99% Impervious Runoff Depth=2.80"
Flow Length=325' Slope=0.0500 '/' Tc=1.7 min CN=95 Runoff=3.49 cfs 0.225 af

Subcatchment3S: SW & Drive Runoff Area=3,690 sf 69.65% Impervious Runoff Depth=2.50"
Flow Length=100' Slope=0.0500 '/' Tc=0.9 min CN=92 Runoff=0.29 cfs 0.018 af

Subcatchment4S: Side Hill Runoff Area=13,565 sf 9.88% Impervious Runoff Depth=0.87"
Flow Length=125' Tc=4.5 min CN=69 Runoff=0.30 cfs 0.023 af

Reach 100R: Summary Node Inflow=1.21 cfs 0.490 af
Outflow=1.21 cfs 0.490 af

Pond 1P: CB#6 Peak Elev=669.35' Inflow=3.49 cfs 0.225 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=3.49 cfs 0.225 af

Pond 2P: CB#7 Peak Elev=669.58' Inflow=3.49 cfs 0.225 af
15.0" Round Culvert n=0.013 L=120.0' S=0.0142 '/' Outflow=3.49 cfs 0.225 af

Pond 10P: Filtration Basin Peak Elev=666.18' Storage=6,652 cf Inflow=6.97 cfs 0.451 af
Outflow=0.69 cfs 0.450 af

Total Runoff Area = 2.327 ac Runoff Volume = 0.491 af Average Runoff Depth = 2.53"
23.13% Pervious = 0.538 ac 76.87% Impervious = 1.789 ac

Summary for Subcatchment 1S: New Parking Lot

Runoff = 3.49 cfs @ 12.02 hrs, Volume= 0.225 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=3.36"

Area (sf)	CN	Description
5,050	69	50-75% Grass cover, Fair, HSG B
25,000	98	Paved parking, HSG B
12,000	98	Paved parking, HSG C
42,050	95	Weighted Average
5,050		12.01% Pervious Area
37,000		87.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.80"
0.8	225	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	Total			

Summary for Subcatchment 2S: New Parking Lot

Runoff = 3.49 cfs @ 12.02 hrs, Volume= 0.225 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=3.36"

Area (sf)	CN	Description
5,050	69	50-75% Grass cover, Fair, HSG B
25,000	98	Paved parking, HSG B
12,000	98	Paved parking, HSG C
42,050	95	Weighted Average
5,050		12.01% Pervious Area
37,000		87.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.80"
0.8	225	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	Total			

Summary for Subcatchment 3S: SW & Drive

Runoff = 0.29 cfs @ 12.01 hrs, Volume= 0.018 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=3.36"

Area (sf)	CN	Description
2,570	98	Paved parking, HSG B
1,120	79	50-75% Grass cover, Fair, HSG C
3,690	92	Weighted Average
1,120		30.35% Pervious Area
2,570		69.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.80"

Summary for Subcatchment 4S: Side Hill

Runoff = 0.30 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=3.36"

Area (sf)	CN	Description
1,340	98	Paved parking, HSG B
4,680	69	50-75% Grass cover, Fair, HSG B
1,630	79	50-75% Grass cover, Fair, HSG C
5,915	60	Woods, Fair, HSG B
13,565	69	Weighted Average
12,225		90.12% Pervious Area
1,340		9.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.3600	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.80"
0.4	75	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.5	125	Total			

Summary for Reach 100R: Summary Node

Inflow Area = 2.327 ac, 76.87% Impervious, Inflow Depth = 2.53" for 10 YR event
Inflow = 1.21 cfs @ 12.05 hrs, Volume= 0.490 af
Outflow = 1.21 cfs @ 12.05 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: CB#6

Inflow Area = 0.965 ac, 87.99% Impervious, Inflow Depth = 2.80" for 10 YR event
Inflow = 3.49 cfs @ 12.02 hrs, Volume= 0.225 af
Outflow = 3.49 cfs @ 12.02 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.0 min
Primary = 3.49 cfs @ 12.02 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 669.35' @ 12.02 hrs
Flood Elev= 671.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	667.00'	**15.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 667.00' / 666.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=3.47 cfs @ 12.02 hrs HW=669.34' TW=669.00' (Fixed TW Elev= 669.00')
↑—**1=Culvert** (Inlet Controls 3.47 cfs @ 2.83 fps)

Summary for Pond 2P: CB#7

Inflow Area = 0.965 ac, 87.99% Impervious, Inflow Depth = 2.80" for 10 YR event
Inflow = 3.49 cfs @ 12.02 hrs, Volume= 0.225 af
Outflow = 3.49 cfs @ 12.02 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.0 min
Primary = 3.49 cfs @ 12.02 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 669.58' @ 12.02 hrs
Flood Elev= 672.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	668.20'	**15.0" Round Culvert** L= 120.0' Ke= 0.500 Inlet / Outlet Invert= 668.20' / 666.50' S= 0.0142 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=3.47 cfs @ 12.02 hrs HW=669.58' TW=669.00' (Fixed TW Elev= 669.00')
↑—**1=Culvert** (Outlet Controls 3.47 cfs @ 3.19 fps)

Summary for Pond 10P: Filtration Basin

Inflow Area = 1.931 ac, 87.99% Impervious, Inflow Depth = 2.80" for 10 YR event
Inflow = 6.97 cfs @ 12.02 hrs, Volume= 0.451 af
Outflow = 0.69 cfs @ 11.77 hrs, Volume= 0.450 af, Atten= 90%, Lag= 0.0 min
Primary = 0.69 cfs @ 11.77 hrs, Volume= 0.450 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 666.18' @ 12.62 hrs Surf.Area= 6,000 sf Storage= 6,652 cf

Plug-Flow detention time= 73.9 min calculated for 0.450 af (100% of inflow)

Center-of-Mass det. time= 73.1 min (848.6 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	662.50'	11,938 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 33,573 cf Overall - 3,728 cf Embedded = 29,845 cf x 40.0% Voids
#2	666.50'	3,728 cf	**ADS_StormTech SC-310** x 252 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 14 rows
		15,666 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
662.50	600	0	0
663.50	600	600	600
663.51	6,000	33	633
669.00	6,000	32,940	33,573

Device	Routing	Invert	Outlet Devices
#1	Device 2	662.50'	**5.000 in/hr Exfiltration over Horizontal area**
#2	Device 3	662.60'	**0.5" Horiz. Orifice/Grate X 100.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	662.60'	**8.0" Round Culvert X 2.00** L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 662.60' / 662.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.69 cfs @ 11.77 hrs HW=663.75' (Free Discharge)
↑—**3=Culvert** (Passes 0.69 cfs of 2.71 cfs potential flow)
↑—**2=Orifice/Grate** (Passes 0.69 cfs of 0.70 cfs potential flow)
↑—**1=Exfiltration** (Exfiltration Controls 0.69 cfs)

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: New Parking Lot Runoff Area=42,050 sf 87.99% Impervious Runoff Depth=5.18"
Flow Length=325' Slope=0.0500 '/' Tc=1.7 min CN=95 Runoff=6.23 cfs 0.417 af

Subcatchment2S: New Parking Lot Runoff Area=42,050 sf 87.99% Impervious Runoff Depth=5.18"
Flow Length=325' Slope=0.0500 '/' Tc=1.7 min CN=95 Runoff=6.23 cfs 0.417 af

Subcatchment3S: SW & Drive Runoff Area=3,690 sf 69.65% Impervious Runoff Depth=4.84"
Flow Length=100' Slope=0.0500 '/' Tc=0.9 min CN=92 Runoff=0.54 cfs 0.034 af

Subcatchment4S: Side Hill Runoff Area=13,565 sf 9.88% Impervious Runoff Depth=2.53"
Flow Length=125' Tc=4.5 min CN=69 Runoff=0.97 cfs 0.066 af

Reach 100R: Summary Node Inflow=2.06 cfs 0.933 af
Outflow=2.06 cfs 0.933 af

Pond 1P: CB#6 Peak Elev=670.11' Inflow=6.23 cfs 0.417 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=6.23 cfs 0.417 af

Pond 2P: CB#7 Peak Elev=670.72' Inflow=6.23 cfs 0.417 af
15.0" Round Culvert n=0.013 L=120.0' S=0.0142 '/' Outflow=6.23 cfs 0.417 af

Pond 10P: Filtration Basin Peak Elev=668.75' Storage=15,075 cf Inflow=12.46 cfs 0.834 af
Outflow=0.69 cfs 0.833 af

Total Runoff Area = 2.327 ac Runoff Volume = 0.934 af Average Runoff Depth = 4.82"
23.13% Pervious = 0.538 ac 76.87% Impervious = 1.789 ac

Summary for Subcatchment 1S: New Parking Lot

Runoff = 6.23 cfs @ 12.02 hrs, Volume= 0.417 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50YR Rainfall=5.77"

Area (sf)	CN	Description
5,050	69	50-75% Grass cover, Fair, HSG B
25,000	98	Paved parking, HSG B
12,000	98	Paved parking, HSG C
42,050	95	Weighted Average
5,050		12.01% Pervious Area
37,000		87.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.80"
0.8	225	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	Total			

Summary for Subcatchment 2S: New Parking Lot

Runoff = 6.23 cfs @ 12.02 hrs, Volume= 0.417 af, Depth= 5.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50YR Rainfall=5.77"

Area (sf)	CN	Description
5,050	69	50-75% Grass cover, Fair, HSG B
25,000	98	Paved parking, HSG B
12,000	98	Paved parking, HSG C
42,050	95	Weighted Average
5,050		12.01% Pervious Area
37,000		87.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.80"
0.8	225	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.7	325	Total			

Summary for Subcatchment 3S: SW & Drive

Runoff = 0.54 cfs @ 12.01 hrs, Volume= 0.034 af, Depth= 4.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50YR Rainfall=5.77"

Area (sf)	CN	Description
2,570	98	Paved parking, HSG B
1,120	79	50-75% Grass cover, Fair, HSG C
3,690	92	Weighted Average
1,120		30.35% Pervious Area
2,570		69.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.80"

Summary for Subcatchment 4S: Side Hill

Runoff = 0.97 cfs @ 12.07 hrs, Volume= 0.066 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50YR Rainfall=5.77"

Area (sf)	CN	Description
1,340	98	Paved parking, HSG B
4,680	69	50-75% Grass cover, Fair, HSG B
1,630	79	50-75% Grass cover, Fair, HSG C
5,915	60	Woods, Fair, HSG B
13,565	69	Weighted Average
12,225		90.12% Pervious Area
1,340		9.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.3600	0.20		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.80"
0.4	75	0.2000	3.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.5	125	Total			

Summary for Reach 100R: Summary Node

Inflow Area = 2.327 ac, 76.87% Impervious, Inflow Depth = 4.81" for 50YR event
Inflow = 2.06 cfs @ 12.05 hrs, Volume= 0.933 af
Outflow = 2.06 cfs @ 12.05 hrs, Volume= 0.933 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: CB#6

Inflow Area = 0.965 ac, 87.99% Impervious, Inflow Depth = 5.18" for 50YR event
Inflow = 6.23 cfs @ 12.02 hrs, Volume= 0.417 af
Outflow = 6.23 cfs @ 12.02 hrs, Volume= 0.417 af, Atten= 0%, Lag= 0.0 min
Primary = 6.23 cfs @ 12.02 hrs, Volume= 0.417 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 670.11' @ 12.02 hrs
Flood Elev= 671.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	667.00'	**15.0" Round Culvert** L= 50.0' Ke= 0.500 Inlet / Outlet Invert= 667.00' / 666.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=6.19 cfs @ 12.02 hrs HW=670.10' TW=669.00' (Fixed TW Elev= 669.00')
↑—**1=Culvert** (Inlet Controls 6.19 cfs @ 5.05 fps)

Summary for Pond 2P: CB#7

Inflow Area = 0.965 ac, 87.99% Impervious, Inflow Depth = 5.18" for 50YR event
Inflow = 6.23 cfs @ 12.02 hrs, Volume= 0.417 af
Outflow = 6.23 cfs @ 12.02 hrs, Volume= 0.417 af, Atten= 0%, Lag= 0.0 min
Primary = 6.23 cfs @ 12.02 hrs, Volume= 0.417 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 670.72' @ 12.02 hrs
Flood Elev= 672.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	668.20'	**15.0" Round Culvert** L= 120.0' Ke= 0.500 Inlet / Outlet Invert= 668.20' / 666.50' S= 0.0142 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=6.19 cfs @ 12.02 hrs HW=670.70' TW=669.00' (Fixed TW Elev= 669.00')
↑—**1=Culvert** (Outlet Controls 6.19 cfs @ 5.05 fps)

Summary for Pond 10P: Filtration Basin

Inflow Area = 1.931 ac, 87.99% Impervious, Inflow Depth = 5.18" for 50YR event
Inflow = 12.46 cfs @ 12.02 hrs, Volume= 0.834 af
Outflow = 0.69 cfs @ 11.44 hrs, Volume= 0.833 af, Atten= 94%, Lag= 0.0 min
Primary = 0.69 cfs @ 11.44 hrs, Volume= 0.833 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 668.75' @ 13.46 hrs Surf.Area= 6,000 sf Storage= 15,075 cf

Plug-Flow detention time= 176.2 min calculated for 0.833 af (100% of inflow)

Center-of-Mass det. time= 175.8 min (936.4 - 760.6)

Volume	Invert	Avail.Storage	Storage Description
#1	662.50'	11,938 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 33,573 cf Overall - 3,728 cf Embedded = 29,845 cf x 40.0% Voids
#2	666.50'	3,728 cf	**ADS_StormTech SC-310** x 252 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 2.07 sf x 14 rows
		15,666 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
662.50	600	0	0
663.50	600	600	600
663.51	6,000	33	633
669.00	6,000	32,940	33,573

Device	Routing	Invert	Outlet Devices
#1	Device 2	662.50'	**5.000 in/hr Exfiltration over Horizontal area**
#2	Device 3	662.60'	**0.5" Horiz. Orifice/Grate X 100.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	662.60'	**8.0" Round Culvert X 2.00** L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 662.60' / 662.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.69 cfs @ 11.44 hrs HW=663.74' (Free Discharge)
↑—**3=Culvert** (Passes 0.69 cfs of 2.69 cfs potential flow)
↑—**2=Orifice/Grate** (Passes 0.69 cfs of 0.70 cfs potential flow)
↑—**1=Exfiltration** (Exfiltration Controls 0.69 cfs)